Old sciences in India – An introduction

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1. KNOWLEDGE BEFORE PRINTING AND AFTER

1.1 What makes a science 'scientific'?

Figure 1.1 – Believing and knowing

Episteme (knowing, understanding)	*Noesis* –	Clarifying reason, dialectic argument, philosophy	Investigating beyond assumed beliefs
	Dianoia –	Formalized science, mathematics	Assumptions made explicit and systematic
Doxa (belief, opinion, appearance)	*Pistis* –	Common sense, habitual faith	Sober and customary
	Eikasia –	Illusion, imagination, myth	Deceptive or metaphorical

Science starts by questioning beliefs that have been taken for granted. These beliefs are built into our views of the world, which is pictured through our senses and our minds. The problem is that our beliefs may be mistaken. When this is so, our knowledge gets confused; and then we see appearances that are not rightly understood.

This problem is described by the ancient Greek word 'doxa'. It implies 'belief, opinion, appearance'. In figure 1.1 above, on the left, the idea of 'doxa' is contrasted with 'episteme', which means 'knowing' or 'understanding'.

Socrates makes this contrast in his simile of the divided line. In figure 1.1, the line is shown vertically. It stands for a progression of learning, from deceptive appearance to investigating reason. On the right side of the line, four stages of learning are summarized.

The lowest stage is learning through the tricky metaphors that are produced by inspired flights of imagination. Next comes the sober common sense of customary faith. Third is the explicit and systematic laying out of assumptions and derivations in a formal science, like Euclid's geometry. By thus making clear assumptions and deductions, they are opened up to a reflective reasoning which can ask for common principles of underlying truth, beneath the differing perceptions and beliefs of our varied senses and our changing minds.

For Socrates and many ancient Greeks, that reflectively reasoned questioning was the highest and the most essential way of learning, at the basis of all genuine science.

1.2 How are beliefs and sciences passed on?

Figure 1.2 – Teaching and discipline

Greek 'doxa' – belief, opinion, appearance

Latin 'docere' – to teach

(negative)	(positive)
doctrine – a system of taught beliefs	doctor – one who is qualified to teach
dogma – teaching by assertion of beliefs	document – a recorded teaching
dogmatic – assertion without enquiry	docile – ready to be trained and taught
orthodox – accepting prescribed beliefs	disciple – one who is committed to be trained and taught
heterodox – rejecting prescribed beliefs	discipline – rigorous system of training and enquiry

Related to the Greek word 'doxa' ('belief, opinion, appearance'), there is the Latin 'docere' which means to 'teach'. From these Greek and Latin words, a number of modern English words have been derived, as shown in figure 1.2 above. The English words are shown in two groups.

One group is shown on the left hand side. Its words have a somewhat negative meaning, because they are associated with the formal assertion of belief – as exemplified by the word 'dogma'. The problem here is that individual persons can get blindly forced or mechanically habituated into accepting external forms of belief that have not been rightly examined and understood.

The second group is shown on the right. Its words have a more positive meaning, because they are associated with a reflective teaching that trains and educates our living faculties – as exemplified by the word 'discipline'. The implication here is that external documents are used reflectively, by investigating what they mean. Under the guidance of a living teacher, the investigation is intended to reflect into a student's inner faculties, so as to educate the student by conviction from within. A systematic and consistent rigour is essential here. But it is not a rigour that can be forced from outside. Instead, it must be inspired by a living teaching that reflects subjectively, within.

1.3 How can a science be 'objective'?

Figure 1.3 – Objective and subjective

Objective – *bhautika* (from 'bhū' – to 'become', to 'happen', to 'take place')	Subjective – *ātmīya* (from 'ātman' – 'knowing subject, inmost self')	'Objective' is related to becoming and change. 'Subjective' is related to an unchanging self that knows all change.
Worldly – *laukīka* (from 'lok' – to 'perceive' and 'loka' – 'region, world')	Spiritual – *ātmīya* (from 'ātman' – 'knowing subject, inmost self')	The 'world' is conceived as made up from objects of perception. 'Spiritual' is conceived as truth of knowing self.
Belief – *mata* (from 'man' – to 'think, suppose')	Faith – *shraddhā* (from 'shraddhā' – to 'trust, be convinced')	'Belief' is an outward habit of supposing and assuming. 'Faith' is conviction, from an inner depth of experience.
	Science – *shāstra* (from 'shās' – to 'correct, chasten, govern')	In science, beliefs are governed, tested and corrected by systematic reason and investigation.
	Enquiry – *vicāra* (from 'vicar' – to 'reflect, question')	Science progresses by asking reflective questions, about assumptions and beliefs that have been taken for granted.
Particular thing – *visheṣha* (from 'vishiṣh' – to 'distinguish')	Generic principle – *tattva* (literally 'tat-tva' – 'thatness')	Particular things are differing instances of generic principles that are shared in common.
Personal – *pauruṣheya* (from 'puruṣha' – 'man, human-ness')	Impersonal – *apauruṣheya* (the prefix 'a-' means 'not')	Each person is derived from a common principle of human-ness, which is itself impersonal.
Seeing – *darshana* (from 'dṛsh' – to 'see, behold, perceive')	Knowledge – *jnyāna* (from 'jnyā' – to 'know')	'Seeing' is a partial perception of differing objects. 'Knowing' is an impartial realization of underlying truth.
Apparent form – *rūpa* (from 'rūp' – to 'form, exhibit')	True nature – *svarūpa* (the prefix 'sva-' means 'self-, own')	'Apparent form' is a superficial view, seen from outside. 'True nature' is experienced at the depth of self, within.

In order to see things objectively, an observer must be detached from all partial and changing views that are produced by a variety of personal and cultural faculties. These faculties have to be understood as objective instruments that are a part of the observed world. All instruments and what they show must be interpreted from a position of detachment that is not compromised by attachment to any partial object or instrument or faculty or viewpoint in the world.

Accordingly, a true objectivity can only be achieved by standing back from the outward world that is observed through our partial personalities. That requires a disinterested observer who can see things impartially, from an independent standpoint that is free from all partialities of personality and culture and world.

Somewhat paradoxically, such an independent standpoint is often sought by reflecting deeper back within, towards an inner core of subjectivity, beneath the partiality and prejudice of our bodily and mental faculties. For the reflection to achieve its purpose, an impersonal depth of inner knowing must be found, beneath the outward biases and limitations of our changeable and driven personalities.

1.4 How have sciences developed, historically? In particular, in the West and India?

Figure 1.4 – Developments of learning

In the West	In India
Ancient – up to 500 BCE No extensive tradition of chanted texts survives, with a recited accuracy that is comparable to the Vedas. Monumental civilizations of Iraq and Egypt, continuing into the classical period. Extensive written records in stone inscriptions, clay tablets and papyrus scrolls.	*Ancient – up to 500 BCE or earlier* Vedic tradition of chanted texts transmitted accurately by oral recitation, from how far back is very uncertain. Non-monumental Indus civilization, with cities and towns declining after 2000 BCE. Technological sophistication as in Iraq and Egypt, but written records all so brief that they cannot even be deciphered yet. ? Uncertainty of dating classic texts that mark the end of the ancient period.
Classical – 500 BCE to 450 CE Greek and Roman classics are written and preserved in libraries. Teaching gets organized through academies. Authority gets centralized, under the Roman empire. The corruption and fall of Rome results in a major break of classical tradition.	*Classical – from before 500 BCE to 900 CE* Sanskrit and Tamil classics are composed and taught through recitation. Teaching follows the 'guru-kula' ideal of individual transmission. Authority remains decentralized, in many different kingdoms and localities. Despite invasions that destroy many kingdoms and cities, classic learning passes on decentralized into the medieval and modern periods.
Medieval – 450 CE to 1500 CE The Christian faith is spread and organized by the Roman Catholic church, which thus establishes a centralized authority over faith and learning in the European middle ages.	*Medieval – 900 CE to 1850 CE* The bhakti movement brings faith into prominence. This develops many regional and vernacular traditions, which combine classic learning and more popular folk culture.
Modern – 1500 CE to the present Printing and Renaissance humanism work towards a scientific and industrial revolution, which spreads school and university education, thus encouraging liberal attitudes of free thought and self-reliant individuality.	*Modern – 1850 CE to the present* The use of printing and new media enables classic and vernacular learning to be taught in modern schools and universities, along with new science from the West. The challenge now is to interpret the old sciences in a modern way, as living disciplines whose reasoning enquires back into an impersonal depth of subjective experience.

In the development of Western science, there have of course been many contributing factors. But two of them can be considered in particular. First, a Western emphasis on the *written word and external documents*. And second, a related emphasis on *organized institutions* that make use of such documentation in external media.

There is a sharp contrast here with the Indian tradition, where the emphasis has been on the *spoken or chanted word* and on an *individual relationship between teacher and student*.

2. Language and tradition

2.1 How is knowledge described, through words and symbols? In particular, how is language used in modern physics and in the old science of linguistics?

Figure 2.1 – Modern physics and linguistics

	Modern physics	***Linguistics***
Primary and direct use	To *calculate* predictions and achieve objective results	To *educate* living faculties of expression and understanding
Secondary and auxiliary use	To *educate* intuitions that inspire successful theories and their useful application	To formulate rules for *calculating* correct word forms and use
Meaning of words and symbols	Defined considerably through artificially agreed convention, like names being used as mere labels to identify places on a map	Based essentially on nature and history, like words that evoke a meaning through their shape of sound

Where modern physics is applied primarily through calculations and machines, the older sciences work more through the cultivated discipline of shāstra (corrective regulation) and the clarifying enquiry of vidyā (investigated learning).

In the last few centuries, modern physical descriptions have been highly standardized to carry out objective calculations, which are tested and applied through standard instruments and machines. It's thus that modern physics has been so successful. But this success has come at the cost of a special restriction.

Modern physics has developed by restricting its consideration to an external world, where objects co-exist in space. This restriction has an obvious advantage. Different people see the same objects and the same structures that relate these objects together. So modern physics can be standardized objectively, for academic institutions and industrial corporations, on a national and global scale.

The older sciences work in a broader and a deeper way. Their testing and their application works through living faculties, which are cultivated and clarified through a subjective reasoning. Such reasoning reflects back in. It does not treat symbols and descriptions as mere calculating instruments. Instead, it questions them reflectively, in search of a knowing that they have expressed.

The questioning is educational. It serves to uncover mistaken assumptions and to clear misleading confusions that prejudice our understanding and our faculties. This leads to clearer understanding and less biased faculties, which are in turn expressed through more accurate and sensible descriptions.

In particular, the science of linguistics works through this educational approach. It has long served as a model for the older sciences. But here, words and symbols must be treated as alive. They are not just artificial labels that get technically defined. Instead they are living expressions that evoke an essential meaning from their nature and their history.

2.2 How can the outward sound of words convey an inner meaning, which is seen subjectively?

Figure 2.2 – Levels of expression

Body	Space	Co-existing points	World of objects	Elaborated structure, perceived by body
Mind	Time	Replacing moments	Succession of states	Mediating process, conceived by mind
	Causality	Continued consequence	Assimilating capability	Silent seeing, at the depth of insight
Consciousness	Knowing in identity			

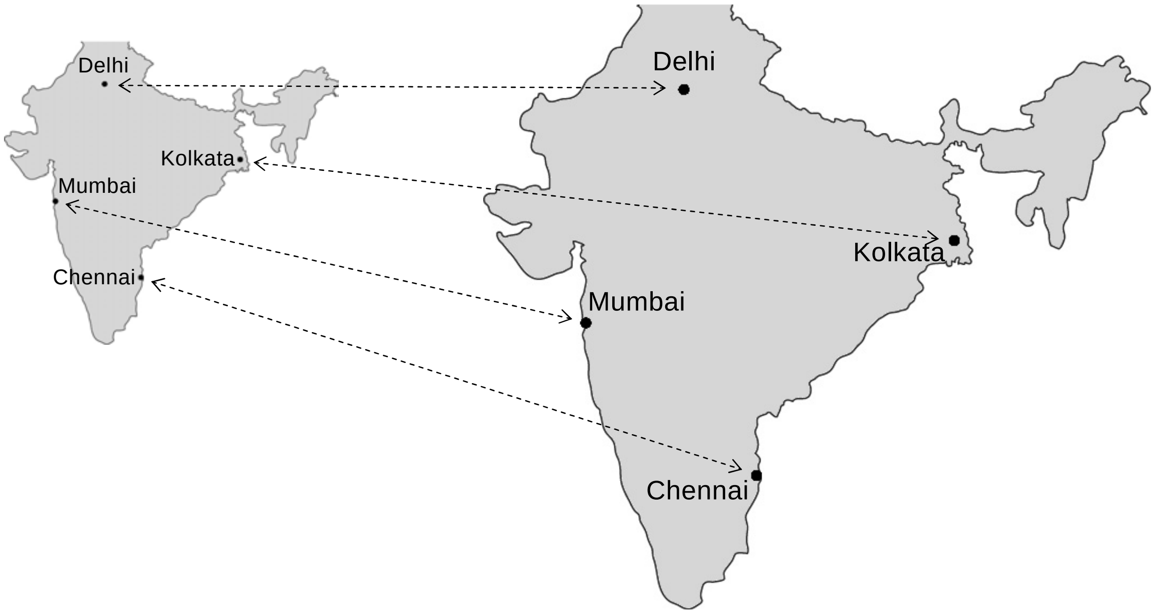
In Sanskrit linguistics, four levels of expression are described:

- The uppermost level is our outside world of space and structure, seen through our bodies. Here, meaning is articulated, in symbols that are joined into elaborated structures. This level is called '*vaikharī*'.
- The second level is a succession of passing states, which each of us experiences in time. For every one of us, the world of objects is conceived in this way, through a succession of replacing states that come and go in mind. Each moment brings a state of mind; and as each moment is replaced by other moments, every state of mind becomes replaced by other states that follow on in time. Here meaning is drawn out and interpreted, as our feelings and our thoughts keep on expressing consciousness and reflecting back to it. A changing stream of mind thus mediates between our inner knowing and the objects we perceive. This mediating level is called '*madhyamā*'.
- At the third level, we experience a continued consciousness, of cause that carries on through time. Such cause must carry on unmanifest, as a quiet potency implying tacit aptitudes and capabilities that may be manifested later on. Here, continuity is carried by a silent seeing at the depth of insight, where changing states of surface mind are taken into lasting knowledge. Here, consciousness appears somewhat paradoxically, as a silent and unmanifested knowing, often described as the 'unconscious'. This is an inner level of invisibly continued seeing, called '*pashyantī*'.
- Beneath all changes and all continuities, there is an underlying ground, from where our knowing is expressed. That ground is a consciousness whose very being is to know. It's only known in identity, by returning back to what it is. There, consciousness is realized, in its own being. That final ground is called '*parā*', which means 'beyond' or 'ultimate'.

In the *Māṇḍūkya Upaniṣhad*, the three levels are described as manifested in three states – of waking, dream and deep sleep. And the ground is called 'caturtha' or 'turīya' or the 'fourth'.

2.3 How are objects named and represented, in the outside world?

Figure 2.3 – Symbolic structure



- A 'structure' is a relationship of parts, co-existing side by side. Through this relationship, smaller objects called 'parts' are seen to form a larger object that is called a 'whole'.
- In a 'symbolic structure', symbols are related together so as to form a description. Each symbol represents a part of some structured whole, and the relationships between symbols represent the relationships between the parts. So the description works through a correspondence of structure, between the description and what is described.
- A 'mechanism' is a functioning structure, whose parts interact so as to produce results.

Modern physics describes the world mechanically. The world is here described as a machine that is made up from component parts. The description is also used as a machine. It is a symbolic machine that conveniently imitates the behaviour of the world that it describes. The world is thus described by *simulating* its behaviour, through mechanical models that are used to predict results.

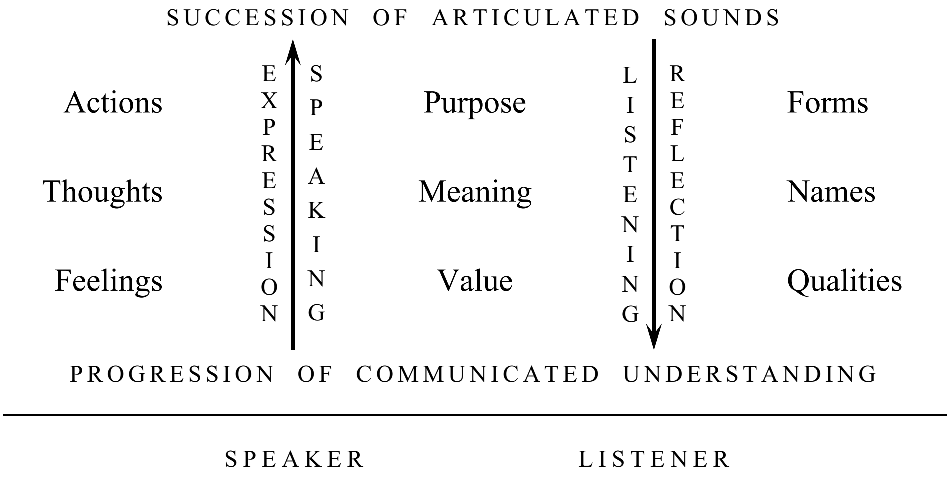
In this 'mechanical approach' to symbols and descriptions, names are used as artificial labels, which serve only to specify a structural correspondence between the description and what it describes.

In figure 2.3 above, this correspondence is shown between four symbols on a map of India and the four cities that they represent. The symbols on the map are given the same name as their counterparts in the actual territory of India, and this specifies the structural correspondence.

For this mechanical purpose, it doesn't matter what the names are, nor how they sound, nor what feelings or thoughts or perceptions they evoke. We could just as well use the name 'Madras' instead of 'Chennai', or 'Bombay' instead of 'Mumbai', or 'Calcutta' instead of 'Kolkata'. Or we could call these cities 'x', 'y' and 'z'.

2.4 How does language convey a living meaning, as it is spoken and heard?

Figure 2.4 – Living speech



In the course of living speech, words do not occur together, side by side, in a structural relationship. They are not like written words, which are read on a map or a page or a computer screen. Spoken words don't co-exist, at the same time. As each word is spoken, it replaces previous words, in the attention of the speaker and the listener. Thus, spoken words occur one after another, in a succession of articulated sounds.

As a living speaker speaks, the spoken sounds express an understanding that is somehow shared with a listener. The expression arises through feelings that involve a sense of value, through thoughts that involve a sense of meaning and through actions that involve a sense of purpose.

As the sounds of speech are heard, a listener interprets them, through a reflection back into understanding. At the level of action, the forms of sound are recognized and seen to show useful purposes. At the level of thought, these articulated forms are interpreted as names or symbols that convey intelligible meanings. And at the level of feeling, the qualities of form and meaning are discerned and judged, in coming to an appreciation of their value.

In this living use of speech, the natural shape of sound does matter, and so does its cultural history. The shape of sound has a naturally evocative effect on our feelings, thoughts and actions – as exemplified in the chanting of mantras and in the playing of music. As meaning is evoked, a further conditioning effect is added on by history and culture – as shown in the changes of name from 'Madras' to 'Chennai', or from 'Bombay' to 'Mumbai', or from 'Calcutta' to 'Kolkata'.

According to Bhartṛihari's *Vākyapadīya* (1.137), no formal structure can amount to genuine speech. A living expression is essential, from an intelligence within. Thus, our languages and our traditions are essentially alive, beyond the objective structures that are described in modern physics.

All arguments and inference
depend upon intelligence.
They're nothing but the power of words.
Where formal logic blindly follows
words expressed in outward speech,
it's just a verbal mimicking
that ties no concrete meaning down.
It cannot record anything.
Such logic is not found in texts
of genuine authority.

3. LEVELS OF MODERN PHYSICS

3.1 What has modern physics contributed to our knowledge of the world?

Figure 3.1 – Five levels of modern physics

Newtonian objects	Pieces of matter, located in space and moving in time.	Objects interact through force, thus forming a material world of static and dynamic structures. These structures work mechanically, like a machine that is made up of interacting parts.
Quantum states	Changing states, in evolving systems of mechanical activity.	As quantum systems interact, they get disturbed, jerkily and unpredictably. They also get disturbed by our observing instruments, so that our observations are inherently discontinuous and uncertain.
Relative observations	Observations of space, time and matter. They are made differently by different observers.	Though observations vary from one observer to another, they show invariant principles – like the speed of light – which are the same for all observers. These principles are governed by basic laws – like the laws of electro-magnetics – which take part in a universal functioning of nature.
Fields of force	Fields that condition space and time; so as to exert a driving force on particular objects, at the place and time where each object is found.	As shown in the theory of quantum fields, all space and time are filled with huge fluctuations of momentum and energy. As these fluctuations take place, they are bunched very close together, in space. And they are very rapid, as they come and go in time. They are so minutely close and so blindingly rapid that our instruments cannot detect them directly. But they have an overall effect which can be detected, as various kinds of force that get to be exerted on the objects we observe.
The space-time continuum	The continuity through which each event is connected to others, in a four-dimensional geometry of space and time.	As shown in the theory of relativity, gravity can be described on the basis of a rather simple principle. When an object moves in a gravitational field, its line of travel is quite straight and therefore quite unforced, in the space-time continuum. But lines that are straight in four dimensions may appear to be bent, when they are viewed through a changing world of three-dimensional space. Then it appears that motion has been forced into changing its speed or its direction. This appearance of forced motion is a superficial show. It arises from a background continuity that is more fundamental. There, nature is connected geometrically, beneath all mechanisms that appear to work through interacting force.

Modern physics has developed by restricting its application to a world of structure that is observed and accessed through externally constructed instruments, outside our living faculties. Living faculties can only be used to postulate theories which must be tested and applied by external instruments and machines.

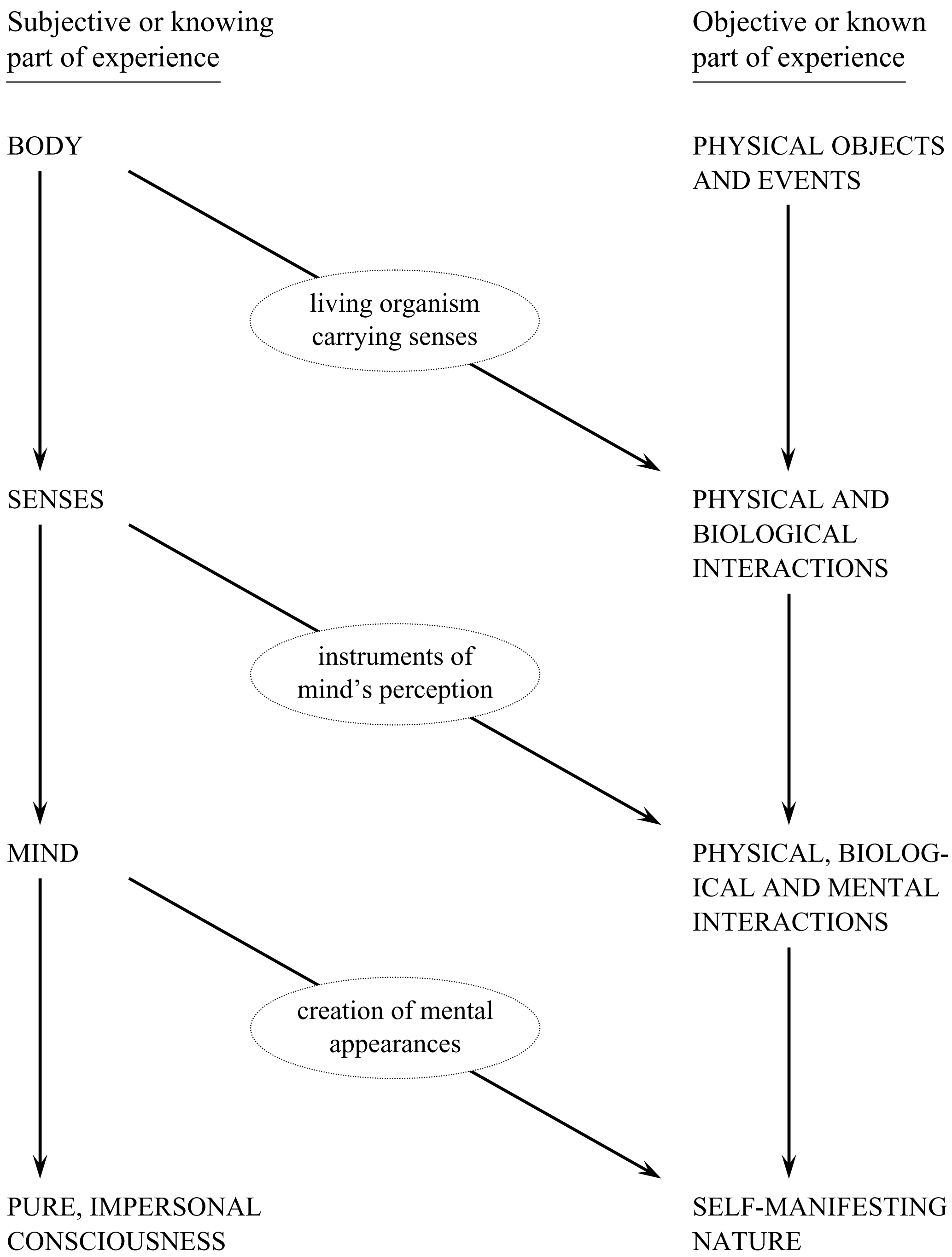
In this approach, time has to be considered along with space. Here, time is essentially a dimension of external measurement that is considered along with the various dimensions of space, so as to form a space-time structure. Space-time events are here treated structurally, as though they co-existed together.

Thus, modern physics cannot properly allow for a more subjective investigation of time, as a sequence of moments that replace each other in a living mind.

4. Nature and consciousness

4.1 How is nature known? How do we observe the phenomena that nature shows?

Figure 4.1 – Knowing and known



When the knowing subject of experience is taken to be a body, it seems to know a world of outside objects and events. But when more carefully examined, it turns out that the body belongs to what is known. It is a living organism that carries perceiving senses, which seem to know a world of physical and biological interactions. Similarly re-examining the senses and the mind, it turns out that the knowing subject is pure consciousness, before which nature manifests whatever may appear.

4.2 Is knowing a process of physical or mental activity?

Figure 4.2 – See-er, seeing and seen

Unexamined assumption	Knowing person		Known world
Distinction of see-er and seeing	See-er	Seeing	Seen
Seeing included with the seen	Pure consciousness	Self-manifesting nature	

In the old conception of *prakṛiti* and *puruṣha*, prakṛiti or nature includes all physical and mental activity. With all actions taken into nature, puruṣha or consciousness is taken to be actionless. So there is a clear distinction between doing and knowing.

- *Doing* is the action of an instrument, which is itself an object of some other such action. Such actions occur in the realm of a completely objective nature – which produces all phenomena, both physical and mental, throughout all space and time. Whatever may appear is here conceived to be produced by the same objective nature. One universal nature is thus taken to manifest itself, in all the phenomena that may appear – no matter where or when, no matter how perceived or thought or felt, in anyone's experience.
- *Knowing* is the actionless illumination of a purely subjective consciousness, which is not an instrument or an object of any action. That consciousness is self-illuminating in itself, in its own being. By its mere presence, as it is, in everyone's experience, it lights each one of the appearances that come and go. Its actionless illumination is thus conceived to light the show of changing happenings that nature manifests, no matter where or when perceived. In this conception, knowing is inherently impersonal, at the inmost centre of personal experience.

In our minds, we experience a process of activity that expresses consciousness – through feelings that judge value in various qualities, through thoughts that interpret meaning in various kinds of information, and through actions that are aimed at various purposes.

Where nature's actions are thus seen to express a subjective knowing, they are described as 'alive'. As living actions are thus seen, we experience them reflectively. We experience them by reflecting back into a common principle of knowing that we share with other beings whom we take to be alive. That common knowing principle provides a living kinship which enables each one of us to recognize that other beings are alive – that in their actions consciousness is found expressed, just as it is in our own personalities.

The living kinship that we share is relatively obvious in family and friends and in people who have minds and senses like ours. And as we reflect more deeply, a more basic kinship can be recognized in people who think and see differently, in animals and plants, and ultimately in nature as a whole – wherever we find purpose or meaning or value expressed.

4.3 As nature functions, how is consciousness expressed? In other words, what is the phenomenon of 'life', which we experience in our minds and bodies and in the world outside?

Figure 4.3 – Life and energy

As seen externally, through mechanical instruments	***As seen by reflective questioning, into our living faculties***
Life is a special property of complex behaviour, which emerges in bodies that are similar to ours. The similarity includes mechanically constructed senses – which function like our eyes, our ears, our noses, tongues, and our skin and flesh. And it further includes a mechanical co-ordination of these senses and other body parts, through some mechanisms that work like our nervous systems and our brains.	All nature's functioning is understood by reflecting back to a common principle of consciousness, which each of us accesses by reflecting back within. Wherever anyone may look, whether life is seen or not depends on *how* one looks. Looking outwardly, at objective structure, no life is ever seen. Reflecting back to consciousness, whatever's seen expresses it, and is thus found alive. Seen thus, all nature is essentially alive.
In the external world, energy acts mechanically, from one object to another. Each object is thus acted upon, by influences and constraints that are imposed from outside. This is a quantitative energy, which is measured by external instruments and transacted between objects and persons. This energy is measured out and used for objective purposes – of achieving desired objects in the world.	As nature functions, a living energy arises from within, acting of its own accord. That is the energy called 'prāṇa'. It does not act from any object in the world. Instead, it is inspired from within – as it arises of its own accord, from an inmost ground of consciousness. That prāṇa is the qualitative energy that expresses value, meaning and purpose in our living activities – as they arise from the consciousness which knows them.

In the Sanskrit tradition, here is what the *Sānkhya-kārikā* says (stanza 52):

nānā-vidhair	All qualities belong to nature,
upāyair upakāriṇy	as she acts in many ways;
anupakāriṇaḥ puṁsaḥ,	not for the sake of objects gained,
guṇavaty aguṇasya	but serving only for the sake
satas tasyā 'rtham	of that true inner principle
apārthakañ carati.	which has no qualities itself
	and is not moved by any act.

From ancient Greece, Aristotle tells us of a similar conception, where 'phusis' or 'nature' is considered to be moved from within. All nature's movements are self-motivated, acting of their own accord. They take place spontaneously – for love of an unmoved principle of consciousness, whose inner knowing lights itself and activates all nature's life. That inner principle is called the 'unmoved mover'. It is the unmoved ground of knowing, present everywhere, beneath all experiences of personality and world. At that unmoved ground, there is no movement or activity; but all movement and activity arises up from there. And it arises naturally, not driven by any mental or physical instrument, but motivated by an inner inspiration that spontaneously expresses consciousness in everyone's experience.

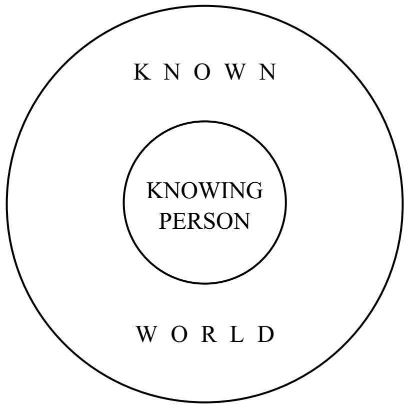
5. MEDIATING MIND

5.1 How do we each think of ourselves, as knowing persons in an external world?

As a person looks around, many things are seen outside, through information taken in.

So, for each person, a process of knowing keeps on taking place, inside. And what's known is a surrounding world, made up of many things.

Figure 5.1 – Knowing island



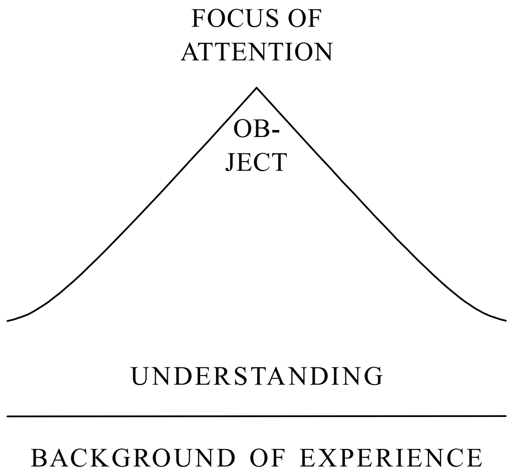
5.2 Does anyone know the entire world, all at once? What is our actual experience of the world, at any point of time?

At any given moment, a person's mind sees something in particular.

So a particular object appears, at the front tip of attention. But underneath, other things are understood, at the background of experience.

From that underlying background, attention is drawn up, so as to focus on the object that appears.

Figure 5.2 – Knowing an object

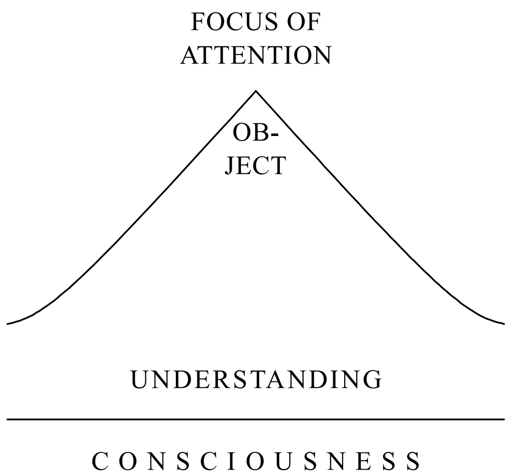


5.3 What carries on, at the background of experience, as objects come and go?

As attention turns from one object to another, there is a succession of appearances, at the surface of the mind. But, in order to know this change of appearances, there must be a deeper knowing, which continues quietly beneath.

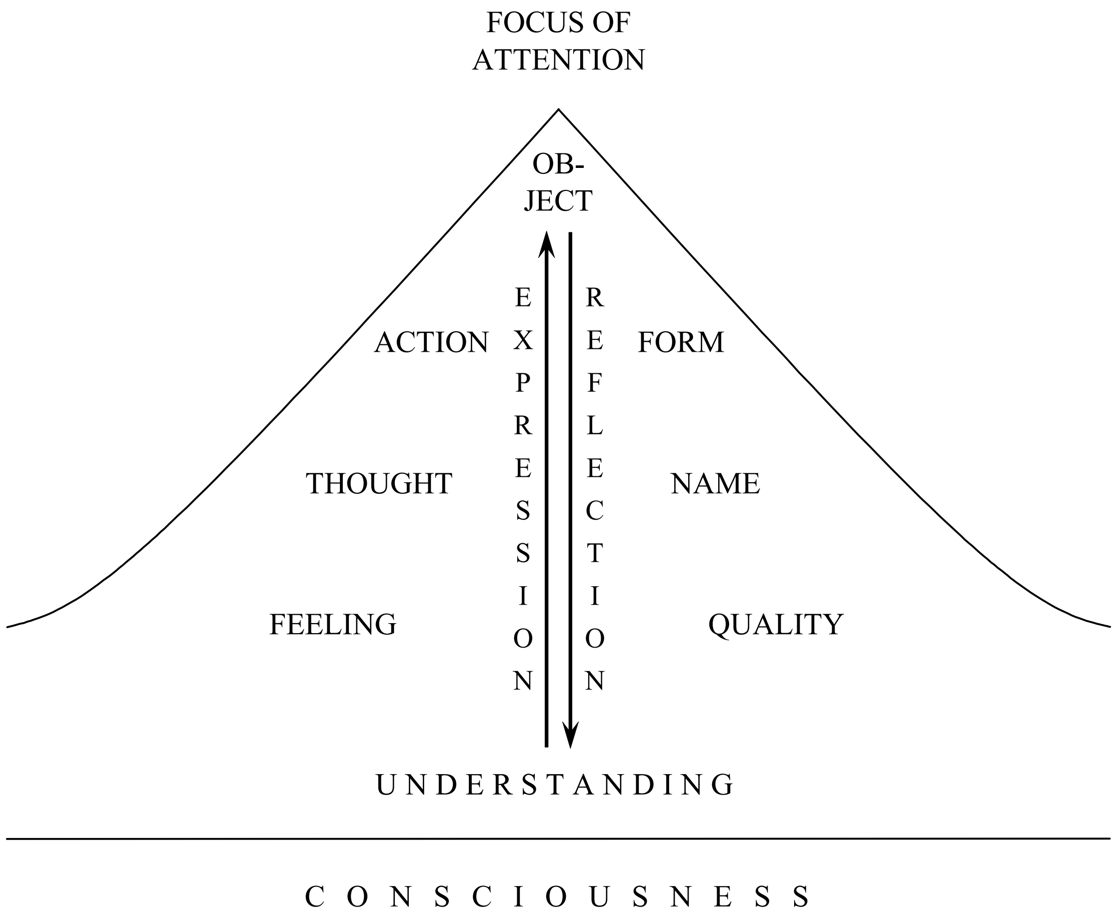
That deeper knowing is pure consciousness, unmixed with the objects that appear in mind. The silent background of the mind is thus an unmixed consciousness, from which all knowing comes.

Figure 5.3 – Underlying consciousness



5.4 How do we learn from experience in the course of time, as attention keeps on turning from one object to another?

Figure 5.4 – Learning from experience



As an object appears in mind, it expresses understanding, from a continued background of underlying consciousness. The expression rises up through feelings, thoughts and actions that have turned attention to this particular object; so that it gets to be perceived, in a narrow focus at the surface of the mind.

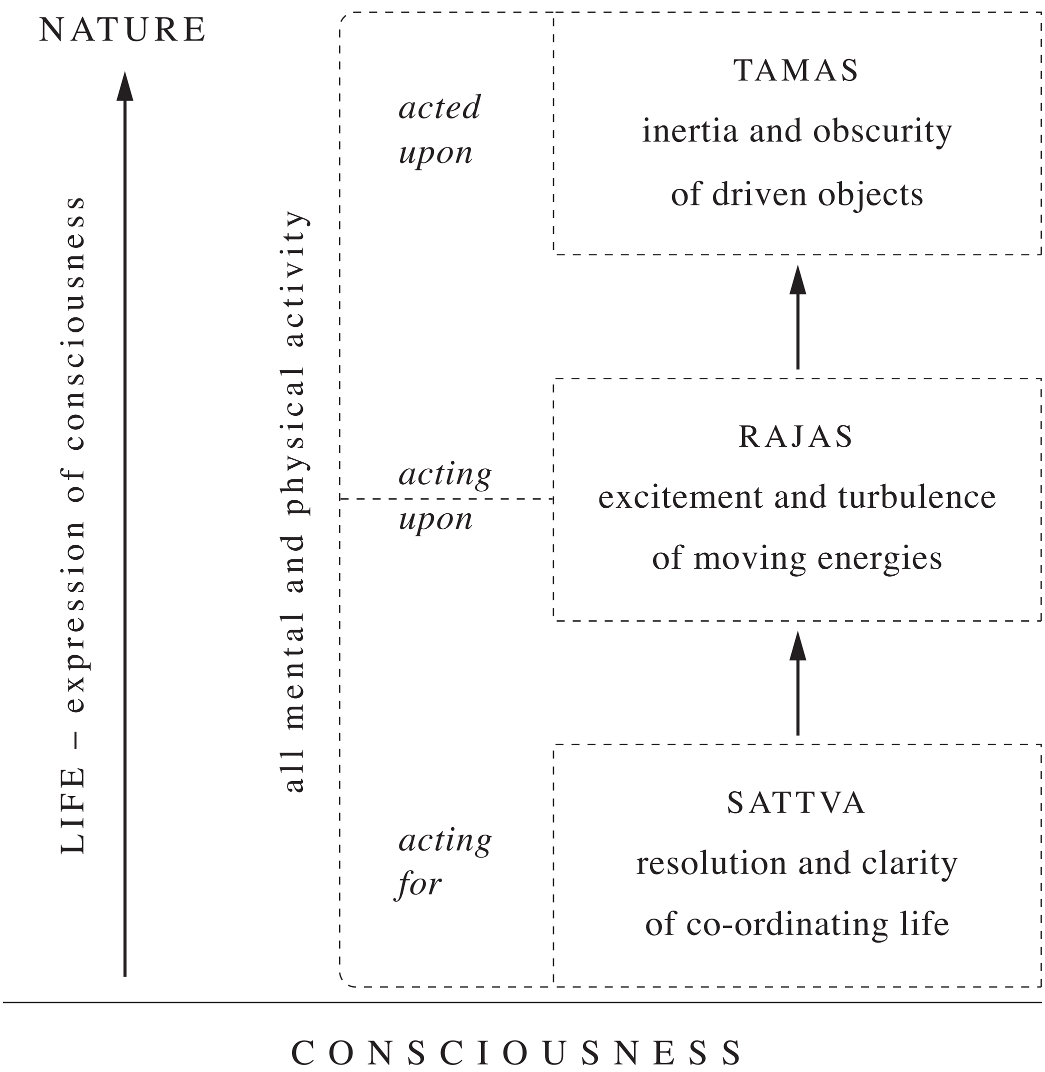
As the object is perceived, its perception is reflected back – by observing the object's form and relationships, by naming the object and interpreting its meaning, and by judging its quality and value. The perception is thus assimilated into a new state of understanding that is carried on in time – by absorption into underlying consciousness, at the continued background.

Then, from the new state of understanding, further feelings, thoughts and actions rise; thus turning attention to further objects that come into appearance and are assimilated into understanding.

This cycle of expression and reflection keeps on mediating back and forth, between the changing objects that appear and the ground of consciousness that carries on beneath. It's only thus that we can learn, as a variety of objects come and go, in the course of continuing experience.

5.5 How does nature show us a world of changing things, in our microcosmic lives and in the universe outside?

Figure 5.5 – The three guṇas



The three guṇas are conceived as interweaving strands of quality, which combine in different ways to produce the changing world. But these same guṇas also show a hierarchy of levels that arise from consciousness, as nature manifests the world.

Tamas is the most superficial level, where nature is *acted upon*. It is characterized by the obscurity and the inertia of driven objects in the world.

Rajas is the intermediate level, where nature *acts upon* objects. It is characterized by the excitement and turbulence of moving energies, through which we may begin to transcend the inertia and the blind opacity of driven objects.

Sattva is a co-ordinating level, at which nature is found everywhere alive, *acting for* the sake of consciousness. Here, nature's driving energies are tacitly inspired by the resolution and the clarity of that continued knowing which is at once their common background and their inmost source of life.

6. LEVELS OF ENQUIRY

6.1 How do our sciences investigate what we observe – from the gross perceptions of our external senses, to more subtle considerations that are progressively uncovered by closer examination and more accurate reasoning?

Figure 6.1 – Macrocosmic elements

Traditional element	*Level of appearance*	*Examining instrument*	*Scientific disciplines*
'Earth'	Pieces of matter	External body	Modern physics
'Water'	Transforming energy	Organic faculties	Biological sciences
'Fire'	Meaningful information	Conceiving intellect	Culture studies and humanities
'Air'	Conditioned character	Intuitive judgement	Psychology and meditation
'Ether'	Continuing existence	Reflective reason	Philosophical questioning

Unchanging ground of reality and consciousness

The old 'five elements' describe a progression of levels, from the gross to the subtle.

At the level of 'earth', differentiated pieces of matter are perceived through our external bodies, as assumed by the calculating theories and technologies of modern physics.

At the level of 'water', an activating and transforming energy is observed through our organic faculties, as cultivated and developed in biological sciences which seek to harmonize our microcosmic lives with their containing macrocosm.

At the level of 'fire', meaningful information is interpreted by our conceiving intellects, as educated and clarified by culture studies and the humanities.

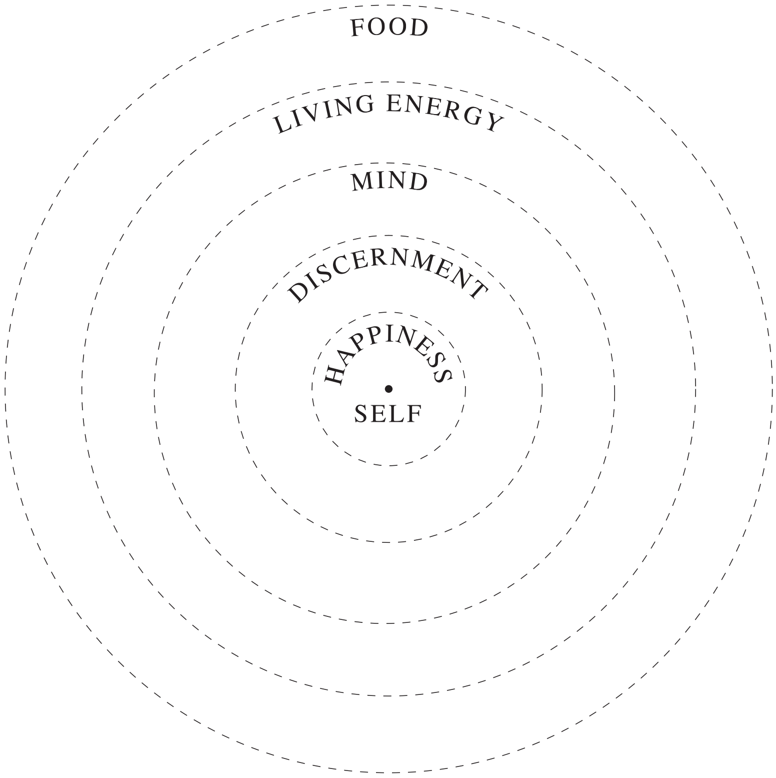
At the level of 'air', a qualitative conditioning is evaluated by intuitive judgements that are exercised and expanded in psychology and meditation.

At the level of 'ether', continuing and common principles are investigated by the reflective reasoning of philosophical enquiry, which turns its questions back upon assumptions that have been taken for granted.

But in the end, all sciences are built on common ground, beneath the change and difference of appearances. That ground is the basis on which scientists communicate. On it depend all scientific standards, of accurate testing and of meaningful reference.

6.2 How is the world at large investigated through our microcosmic personalities?

Figure 6.2 – Coverings of personality



The old five elements are said to be experienced through five 'koshas' or 'coverings of personality'. Material objects are experienced through the 'annamaya kosha' or the 'covering of food', corresponding to the solid element 'earth'. Changing activities are experienced through the 'prāṇamaya kosha' or the 'covering of living energy', corresponding to the fluid element 'water'. Meaningful information is experienced through the 'manomaya kosha' or the 'covering of mind', corresponding to the burning and radiating element 'fire'. Conditioned qualities and values are experienced through the 'vijnyānamaya kosha' or the 'covering of discernment', corresponding to the qualitative and influencing element 'air'. Continuing and common principles are experienced through the 'ānandamaya kosha' or the 'covering of happiness', corresponding to the pervading and integrating element 'ether'.

Within these five coverings, there is an unchanging core of subjective self, shared in common by all experience. Seen from the outside world, the self seems like a restricted centre, enclosed within its coverings of personality. But as a reflective investigation penetrates the coverings, it turns out that experience broadens as it is examined deeper back into the depth of mind. Accordingly, the self is realized as an impartial background of pure consciousness, extending through all changes and all differences of everyone's experience.

Each microcosm shares that common ground of consciousness, at every moment of experience. (See the previous figure 5.4 on page 15, where the subjective ground is shown beneath the horizontal line. Above the line, this figure shows the five-fold layering of elements and koshas, within the broken triangle formed by the three lines.)

All microcosms rise from that common ground, which thus underlies the macrocosm as well.

6.3 As sciences reflect more deeply into individual experience, how can they be discussed or taught in academic institutions? What is an 'individual'? What is each person's 'individuality'?

In modern physics, the common ground of science is considered only as an objective world, where all standards depend on objects and structures that are commonly identified. However, in the older sciences, a further consideration is investigated, by reflecting the investigation back towards a ground of knowing that is shared subjectively. Such a subjective ground is inherently impersonal. It is an impersonal reality which different people share, beneath their changing personalities.

But is there such a ground, which is at once an impersonal reality and a subjective consciousness? Can a subjective reflection reach back down, to an impersonal knowing that gets usefully expressed in effective feelings, thoughts and actions?

These questions are avoided by the mechanical testing and application of modern physics. But they are kept open and alive, in the working practice of older sciences that turn attention more directly to our lives and minds. And this presents us with something of a challenge, in our modern academic teaching and its instituted standards.

As sciences investigate more deeply, into inner levels of experience, their teaching and their practice must become more individual. Accordingly, as sciences become more inward, they become less suited to external institutions, like modern universities and schools. This applies in particular to disciplines of meditation and spiritual enquiry. Here, books and scholars and institutes are inherently peripheral. The teaching centres on an individual relationship, between teacher and disciple.

What's taught arises from an inner depth of accomplishment, attained by the teacher. It is from there that techniques are used and ideas are interpreted, to guide and inspire a corresponding accomplishment in the disciple. Such an accomplishment works deep within the personality. As it proceeds, it is meant to go further down, to a depth where it becomes more impersonal and more dispassionate, so that a truer knowledge may be found.

This kind of learning can't be taught or tested or applied by academics, in their institutional and scholarly capacity. And yet, academics do have a role to play, in maintaining and presenting information about the inner sciences. Here, an admission is required on the part of academics. It needs to be admitted clearly that they are no more than very limited accountants, reporting superficially upon a scientific practice that is learned and carried out elsewhere.

Thus, in a fundamental sense, reflective disciplines of meditation and philosophy cannot be academic subjects. When academics describe these subjects, their descriptions can't be more than theoretical. The actual practice of meditating must be learned and applied through a reflective journey. So also philosophical enquiry. In either case, the journey must go back within. It must penetrate beneath its theories and descriptions, to an inner depth of individuality.

One major difficulty here is our current notion of the 'individual'. This notion has become debased, by confusing individuality and personality. The word 'individual' comes from the Latin 'individuālis', which means indivisible. This is its essential meaning. It refers to an inner unity, at the centre of divided personality. The old sciences are intended to reflect back there, in search of a knowing that is free from the bias and distortion of our physical and mental partialities.

7. Physics and biology

7.1 As modern physics has developed, how does it affect the old sciences? Has it replaced them and thus made them obsolete? Or do the old sciences have something to contribute which modern physics lacks?

7.2 What does modern physics tell us about living organisms? What is the contribution of modern anatomy, biochemistry and molecular biology? In what way are these *life* sciences? How do they study the phenomena of life and intelligence?

7.3 How does physics help with our sciences of health and healing? How can the old systems of medicine be understood today, in a way that takes modern physics into account?

7.4 What about old sciences, like ritual and astrology, which have long been associated with the arts of healing?

8. Communication and enquiry

8.1 What is meant by the word 'information'? Where modern sciences of information are focused on the use of electronics and computers, the older sciences of information were called the 'humanities'. As this name indicates, these 'humanities' include the creative arts, and they are focused on the education of our living faculties. But in what way are they 'sciences'? How can they include an artistic and creative element, along with a scientific reasoning? In particular, take history and linguistics. How far are they scientific, despite the fact that they are actually applied through creative interpretation and expression?

8.2 How is psychology a 'science'? What use has it made of prāṇāyāma and meditative practices, as in the old sciences of yoga?

8.3 What is the use of philosophical enquiry? How is it practically applied?